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The present invention relates to an anti-theft device for flat objects, in particular video cassettes or music cassettes and the like, with a container which is intended to receive the object and is composed of a container lower part and connected lid or a jacket with insertion opening provided on a narrow side, and a slide which can be fitted onto the object to be protected and can be inserted into the jacket together with the object, and with locking means between the container lower part and lid and/or between jacket and slide, and with a signal transmitter, arranged on the container or on the jacket, for triggering an alarm.

In known devices of this kind, the container and/or the jacket are composed, as a rule, of hard plastic which has to receive a case-shaped object, such as for example a CD cassette, to be protected against theft, the jacket being provided with a so-called resonant circuit label, so that when the label passes an induction loop arranged at the exit of retail businesses an alarm is triggered if the jacket is taken together with the object without paying. As a rule, the reusable jacket is separated from the CD cassette at the cash desk of a retail business by means of a special tool. A large variety of locking systems are known, operating with bolts, bars or hooks which connect the jacket to the object until unlocking takes place using a special tool.

A particularly suitable embodiment of such a device

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is known from EP-A-0 508 201 of the applicant, which embodiment is distinguished by the fact that a bracket-shaped auxiliary element which is guided in a longitudinally displaceable fashion is provided on the inside of one of two narrow sides of the jacket lying opposite one another, at each of the ends of which element a stiff limb which protrudes at a right angle is provided, the case-shaped object being caught between these limbs when it is displaced, and the outer end piece of the bracket being able to bend out in a sprung fashion in order to remove the object from the bracket, and thus out of the jacket, or insert it into it, when the bracket is moved out, the inner end of the bracket having, near to the protruding limb, a locking lug which, viewed in the longitudinal direction of the bracket, is located outside the limb, also protrudes inwards and is provided for latching, when the bracket is essentially inserted completely into the jacket, into a locking slit on the narrow side of the jacket lying opposite the insertion opening, desired unlocking being effected by means of a special tool.

The object of the present invention has been to simplify further the structural complexity of a device defined above, in particular however to improve the operational reliability and the aimed-at security still further.

The object has been achieved with a device of the

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aforesaid type by locking means of a special design, such as are defined in the characterizing part of Claim 1.

The core of the invention lies thus in the interaction of the locking latches which are arranged on the deflectable tongues and have the recesses in the displaceable bar and/or in the lateral boundary wall of the slide.

A particularly preferred embodiment of the subject matter of the invention is distinguished by the fact that the locking strip has a plurality of, preferably three, sprung tongues which are arranged one behind the other and have locking latches, and that, in the bar and/or in the boundary wall of the slide, a number of recesses for receiving the locking latches is provided which corresponds to the number of tongues.

Further preferred features which can be combined as desired are defined in the dependent Claims 3 to 12.

The invention is explained in somewhat more detail below with reference to exemplary embodiments illustrated in the drawing, in which:

Fig. 1 shows a purely schematic view of the basic design of a device according to the invention on a security container composed of container lower part and connected lid;

Fig. 2 shows the actual locking mechanism in the open position

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in a somewhat enlarged view;

Fig. 3 shows the locking mechanism corresponding to Fig. 2 but in the locked position;

Fig. 4 shows the bar;

Fig. 5 shows the locking strip as a punched part, i.e. before the bending over of the guides and of the locking latches;

Fig. 6 shows a purely schematic view of a second embodiment of an anti-theft device according to the invention;

Fig. 7 shows, also in a purely schematic view, a device according to Fig. 6 with the upper half of the jacket removed;

Fig. 8 shows an embodiment of a lower half of a jacket made of plastic in a plan view;

Fig. 9 shows, also in a plan view, a narrow side of a jacket with inserted locking strip, slide and cassette;

Fig. 10 shows the slide from the side;

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Fig. 11 shows the slide in a plan view;

Fig. 12 shows a punched blank for forming the slide;

Fig. 13 shows the locking strip from the side with raised spring tongues and locking latches;

Fig. 14 shows the locking strip in the normal position and in the locked position;

Fig. 15 shows the locking strip from the front;

Fig. 16 shows a punched blank for forming the locking strip;

Figs. 17 and 18 show the special unlocking tool from the side and from the top, respectively;

Fig. 19 shows an embodiment variant of a spring tongue and

Fig. 20 shows an unlocking variant.

Fig. 1 of the drawing shows a purely schematic view of a security container, composed of container lower part 1 and lid 2 which is connected thereto by means of hinges 3, 4.

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In a narrow compartment 5 between the narrow side wall 6 and a dividing wall in the container component 1 a locking mechanism is accommodated, being composed of a locking strip 8 made of spring-elastic material (for example steel or brass), in the plane of which three sprung tongues 9 are provided, which tongues protrude, in the locked position, to one side with locking latches attached thereto and engage in recesses of a displaceable bar 10.

In this position (with the lid closed), protruding lugs 11 engage under angled stops 12 on the edge of the lid and prevent the container opening.

In order to unlock it, a special tool is used to engage under the free tongue ends through matching openings from the base side of the container component 1 (which tongue ends protrude towards the other side of the locking strip 8 in comparison with the locking latches), and to raise said free tongue ends from the locked position so that the bar 10 can be pushed back again.

The displacement of the bar 10 (likewise in the form of a strip made of metal or plastic) which bears directly against the fixed locking strip 8 is also carried out by means of a slider knob 13.

Figs. 2 and 3 show enlarged details of the locking

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mechanism in the open position (Fig. 2) and locked position (Fig. 3), respectively. The firmly anchored locking strip 8 has three tongues 9 which, in the open position, bear against the displaceable bar 10. The latter is provided with three recesses 10' into which the locking latches 9' of the tongues 9 latch in the locked position (see Fig. 3).

The locking latches 9' have a prolongation 9" which can engage under the edge of the recesses 10' during the pushing-back procedure, so that unintentional opening cannot take place.

One embodiment of the slide 10 with recesses 10' and lugs 11 as well as slider knob 13 is shown in Fig. 4 (view from above and plan view).

Fig. 5 shows a punched component forming the locking strip 8.

The free ends 9" of the tongues 9 are angled slightly and, in the locked position, protrude into the space 5 in such a way that they can be grasped by means of a special tool 14, raised and the locking latches can thus be drawn out of the locked position. The bar 10 can then be pushed back into the open position (Fig. 2).

Other solutions for displacing the bar 10 are also conceivable.

Instead of a mechanically acting special tool 14

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(see Fig. 17, for example), the tongues 9 could also be lifted out of the locked position by means of magnetic force, in particular a solution according to Fig. 20 suggesting itself in order to increase security: magnetic elements with different polarity are attached to the tips of three tongues 9, which magnetic elements can only be lifted out of the locked position simultaneously if, likewise, unlocking magnets with different polarity are used.

Fig. 6 of the drawing shows a purely schematic view of an anti-theft device according to the invention. It consists basically of a jacket 100 which is made of plastic and which is composed itself of a lower jacket half 102 and upper jacket half 103 which are fitted together in a manner known per se. The jacket 100 has, on a narrow side, an insertion opening 101' for the object 105, for example a music cassette, to be protected. The jacket 100 can have on the upper side a large cutout 101" which permits the contents to be viewed.

The jacket is equipped in a manner known per se with an alarm, for example a resonant circuit label, so that when the object passes an induction loop arranged at the exit of retail businesses, an alarm is triggered if the jacket is taken together with the object without paying (when payment is made the jacket is removed from the object by means of a

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special tool).

The actual locking of the object 105 to the jacket 100 is carried out by means of a slide 104 which at least partially embraces the object and can be released therefrom only when the object is withdrawn.

If the longitudinal wall 104' of the slide can be bent, the object 105 can also be removed from the slide 104, and/or inserted therein, when said slide 104 is pulled partially out of the jacket 100.

Fig. 7 shows a view of the device according to Fig. 6 with the jacket upper part 103 removed, namely the lower half of the jacket 102, the slide 104 which engages around an object 105 to be protected, and, the most important element, a locking strip 106 which is non-displaceably arranged in the directly adjacent narrow-side inner wall 102' of the jacket 100 or 102. The locking strip 106 runs parallel to the jacket wall and virtually bears against it.

The strip 106 is composed of spring-elastic material, for example of brass or spring steel, and has three sprung tongues 107 arranged one behind the other at equal intervals. Each tongue 107 has two parallel locking latches 107' and a free tongue end 107".

The locking latches 107' protrude, in the normal or

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locked position, out of the plane of the locking strip 106 towards the inside of the jacket, while the free tongue ends 107" protrude in a slightly angled configuration out of the plane of the strip towards the wall of the jacket and, in this configuration, are received by recesses in the wall of the jacket.

In the displaceable longitudinal wall 104' of the slide 104, recesses 104" are provided, into which the locking latches 107' of the locking strip 106 engage and prevent the inserted slide 104 from being pulled out again together with the object caught therein (if no intentional or authorized unlocking takes place).

Unlocking is extremely easy: a special tool (see Figs. 17 and 18) can be inserted in a straight manner through slits 108 near to the edge in one side of the cover of the jacket, and can then be slightly displaced laterally until the tool engages under the free spring ends and, in doing so, raises the spring ends in the direction of the jacket wall by means of slopes, the locking latches 107' being automatically disengaged from the slide 104. In this way, the unlocked position is brought about, and the object 105 can be pulled out of the jacket together with the slide.

Of course, the jacket 100 and slide 104 can always

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be used again by placing the slide on a new object and inserting the entire configuration into the jacket for renewed locking.

This solution which is extremely simple in terms of its manufacture increases the security in comparison with earlier designs substantially.

The free ends of the sprung tongues 107, and if appropriate the locking latches, can, when necessary, be hardened or be composed of hard metal in order to increase their service life.

Fig. 8 shows in detail a plan view of a lower half of the jacket 102. In this jacket, in order to give a better overview, neither the locking strip nor the slide have been used.

Fig. 9 shows a plan view of the locking edge, with jacket 102, slide 104 (with object 105 to be protected) and locking strip 106 with the sprung tongues 107 with their free ends 107" and locking latches 107', the latter engaging in recesses in the longitudinal wall of the slide 104.

In order to explain the locking procedure, the innermost tongue 107 is illustrated in the unlocked state, i.e. with the free tongue end 107" pivoted out into a recess 102" of the side wall of the jacket (by means of a special tool), and thus with the grid latch 107' disengaged from the

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slide 104.

Figs. 10 to 12 show the slide 104 with the wall components 104', 104", 104'', and 104''' for grasping an object, and with the recesses 109-111 for receiving the locking latches of the locking strip (not illustrated). Fig. 12 shows here a punched blank for forming the slide 104.

Figs. 13 to 16 show the locking strip 106. Fig. 13 shows ends 107" of the sprung tongues 107, which ends have been raised here by means of the special tool 112, and locking latches 107' which have been moved out of the effective position, while Figs. 14 and 15 show the strip in the normal or locked position, i.e. with free tongue ends 107" on one side of the plane of the strip and locking latches 107' on the other side of the plane of the strip. The beadings 113 serve to attach the strip to the narrow-side inner wall of the jacket.

Finally, Fig. 16 shows a punched blank for forming the locking strip 106.

Finally, Figs. 17 and 18 show a special tool in the form of a plate 114 with L-shaped fingers 115 which are provided for engaging with the beveled components 112 under the free ends of the tongues 107 and moving them into the unlocked position.

Thanks to the particular design of the locking

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strip it is virtually impossible for unauthorized persons to be able to release the lock.

The fingers 115 of the tool pass through recesses 108 in the jacket into the initial position of the unlocking configuration, which is brought about by means of a lateral displacement. Here, all the tongues must be raised simultaneously and moved into the unlocked position.

The tool is usually arranged in a table on the cash desk with fingers projecting upwards, so that all that is necessary is to place the jacket over the fingers from above and to perform the unlocking procedure with a translatory movement.

Fig. 19 shows how the tongues can be divided in the longitudinal centre, so that there are two tongue components 207, 307 lying next to one another. Unauthorized raising of the locking latches is made substantially more difficult by this. This can also be brought about by additional structural measures (dividing walls, stops).

Fig. 20 illustrates a special magnetic tool for raising tongues with alternately polarized ends, which also makes unauthorized unlocking virtually impossible. The magnets of the tool may comprise electromagnets.

Patent Claims

1. Anti-theft device for flat objects, in particular video cassettes or music cassettes and the like, with a container which is intended to receive the object and is composed of a container lower part and connected lid or a jacket with insertion opening provided on a narrow side, and a slide which can be fitted onto the object to be protected and can be inserted into the jacket together with the object, and with locking means between the container lower part and lid and/or between the jacket and slide, and with a signal transmitter arranged on the container or on the jacket, for triggering an alarm, characterized in that the locking means have the following elements:

- a locking strip which is arranged permanently on the inner wall of the container of a container part or in the narrow-side inner wall, lying directly opposite the slide, of the jacket and which runs parallel to the wall and is made of spring-elastic material and in whose plane at least one sprung tongue is provided, out of which plane at least one locking latch protrudes, towards one side, in the normal, i.e. locked position, on the one hand, while, on the other hand, the free tongue end has means for permitting the locking latch to be pulled onto the other side of the strip, i.e. out of

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the locked position, by means of a special tool for the purpose of unlocking;

- the inner wall of the container part or the narrow-side inner wall of the jacket being configured so as to permit the free end of the aforesaid sprung tongue or tongues of the locking strip to pivot out in the locked position;
- a bolt which is displaceably guided with respect to the locking strip, bears against the strip and has at least one recess, the bolt gripping under securing projections on the other container part and preventing the container from opening in the locked position, and a boundary wall on the slide which faces the locking strip or the narrow-side inner wall of the jacket and has at least one recess, into which recesses the locking latch or latches of the strip engages after traveling over, preventing the slide or the object to be secured from being pulled back;
- and this is all effected in such a way that by using a special tool the locking latch can be pulled, for the purpose of unlocking, out of the recess of the displaceable bolt or the boundary wall on the slide.

2. [cf other claims] Device according to Claim 1, composed of a jacket, intended to receive the object, with insertion opening provided on a narrow side and with a signal

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transmitter, arranged protected on the jacket, for triggering an alarm, in addition with a slide, which can be fitted onto the object to be protected, holds it and can be longitudinally displaceably inserted, together with the object, into the jacket, and finally, locking means, which act between a narrow side, leading to the insertion opening, of the jacket and the slide and prevent an object which has been inserted, with the slide fitted on, into the jacket from being separated from the jacket without the use of a special tool, characterized in that the locking means have the following elements:

- a locking strip, which is arranged in the narrow-side inner wall, lying directly opposite the slide, of the jacket, runs parallel to the wall and is made of spring-elastic material and in whose plane at least one sprung tongue is provided, out of which plane at least one locking latch protrudes towards the inside of the jacket, in the normal, i.e. locked position, on the one hand, while the free tongue end protrudes in a slightly angled configuration towards the wall of the jacket, on the other hand, so that it can be grasped by a special tool for the purpose of unlocking, and, in the procedure, the locking latch can be pulled to the other side of the strip, i.e. out of the locked position;
- at least one recess in the aforesaid narrow-side inner wall of the jacket, which in the locked position permits

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the free end of the aforesaid sprung tongue or tongues of the locking strip to pivot out;

- at least one recess in a boundary wall of the slide, which boundary wall faces the locking strip and/or the narrow-side inner wall of the jacket and in which boundary wall the locking latch or latches of the strip locks, after traveling over, and prevents the slide, and/or the object to be protected, from being withdrawn; and
- openings provided in the wall of the jacket for insertion of a special tool which engages under the sprung tongue or tongues of the locking strip, in order to draw the locking latch out of the recess of the slide for the purpose of unlocking, and to unlock the slide together with the object to be protected.

3. Device according to Claim 1 or 2, characterized in that the locking latch has a rearwardly projecting end projection, which can engage under the edge of the recess after the locking procedure.

4. Device according to one of Claims 1 to 3, characterized in that the locking strip has a plurality of, preferably three, sprung tongues which are arranged one behind the other and have locking latches, and in that, in the bar or in the aforesaid boundary wall of the slide, a number of recesses corresponding to the number of tongues are provided

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for receiving the locking latches.

5. Device according to one of Claims 1 to 4, characterized in that the special tool is in the form of a rigid plate with a number of L-shaped unlocking fingers corresponding to the number of sprung tongues, it being possible to introduce said unlocking fingers through openings in a container component or in the jacket wall and to slide them under the free tongue ends in order to lift up the latter and, in doing so, lift the locking latches out of engagement with the bar or the slide.

6. Device according to one of Claims 1 to 5, characterized in that each of the sprung tongues has two parallel locking latches.

7. Device according to one of Claims 1 to 6, characterized in that a plurality of sprung tongues are provided at regular or irregular intervals behind one another, and in that the recesses are arranged in the bar and/or the slide at corresponding intervals.

8. Device according to one of Claims 1 to 7, characterized in that each of the sprung tongues is split along its longitudinal centre.

9. Device according to one of Claims 1 to 7, characterized in that the locking strip is composed of metal, in particular of brass or spring steel.

10. Device according to one of Claims 1 and 3 to 9,

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with a container, which is intended to receive the object and is composed of a container lower part and connected lid, and with locking means between the container lower part and lid, characterized in that the locking means have a locking strip, which is permanently arranged on the inner wall of a narrow side of the container, runs parallel to the wall and is made of spring-elastic material and in whose plane at least one sprung tongue is provided, which can be deflected out of said plane on both sides and out of which at least one locking latch protrudes towards one side, while the free tongue end has means so that, for the purpose of unlocking, the locking latch can be drawn out of the locked position in the direction of the other side of the strip by means of a special tool, in that, in addition, a bar, which is guided so as to be displaceable along the locking strip, and has at least one recess is provided, the locking latches of the strip locking into said recess, after traveling over, and the bar engaging, in this position, under securing projections on the other container part so that in the locked position the container is prevented from being opened without the use of the special tool.

11. Device according to one of Claims 1 to 10, characterized in that the ends of the locking latches can be lifted out of the locked position by magnetic fields applied from outside the container or the jacket.

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12. Device according to Claim 11, with at least three locking tongues, characterized in that at least one of the tongues has a reversed magnetic polarity in comparison with the other tongues, so that magnets with correspondingly different polarity can be used for the purpose of unlocking.

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Abstract**Anti-theft device**

The device is composed of a housing (1) for an object to be secured, with locking means (8, 10) composed of a non-displaceably arranged locking strip (8) with sprung tongues (9) which, in the locked state, lock with a displaceable bolt (10) by means of locking latches (9'), and can release the lock by spring extension of the free tongue ends (9'').